Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (currently amended) A virus-like particle comprising ~~at least one protein selected from the group consisting of~~:

~~(a)~~ at least one protein ~~having an~~ comprising amino acids 2-131 of ~~sequence as set forth in~~ SEQ ID NO:1. [[;]]

~~(b) a protein having an amino acid sequence as set forth in SEQ ID NO:3; and~~

~~(c) a mutein of said protein of (a) or (b).~~

2. (previously presented) The virus-like particle of claim 1, wherein said protein is recombinant.

Claims 3-10 (cancelled)

11. (currently amended) A vector for producing an AP205 virus-like particle comprising a nucleotide sequence ~~being at least 80%, preferably at least 90%, more preferably at least 95%, and even more preferably 99% identical to that of SEQ ID NO:2 or SEQ ID NO: 4.~~ encoding a protein comprising amino acids 2-131 of SEQ ID NO:1.

12. (cancelled)

13. (currently amended) A composition comprising:

(a) a core particle ~~selected from the group~~ consisting of

~~(i) an AP205 virus particle; and~~

~~(ii)~~ an AP205 virus-like particles comprising at least one protein comprising amino acids 2 to 131 of SEQ ID NO:1; and

(b) an organic molecule,

wherein ~~the~~ said organic molecule is bound to the core particle.

14. (currently amended) The composition of claim 13, wherein said organic molecule and core particle ~~forms~~ form an ordered and repetitive array of ~~the~~ said organic molecule on the surface of ~~the~~ said core particle.

15. (currently amended) The composition of claim 13, wherein ~~the~~ said organic molecule is bound to ~~the~~ said core particle via a third molecule~~, said third molecule linking the core particle to the organic molecule~~.

16. (currently amended) The composition of claim 13, wherein said organic molecule is bound to ~~the~~ said core particle by at least one covalent bond~~, wherein preferably said covalent bond comprises a peptide bond~~.

17. (currently amended) The composition of claim 13, wherein said organic molecule is bound to ~~the~~ said core particle by at least one non-peptide covalent bond~~, wherein preferably said covalent bond comprises a non-peptide bond~~.

18. (currently amended) The composition of claim 13, wherein ~~the~~ said organic molecule ~~comprises, or preferably~~ is~~,~~ a hapten, an antigen or an antigenic determinant~~, and wherein more preferably said organic molecule is an antigen or an antigenic determinant~~.

19. (currently amended) The composition of claim 13 or 18, wherein ~~the virus-like particle~~ said core particle contains at least a first attachment site, and ~~the~~ said organic molecule contains at least a second attachment site, such that said second attachment site ~~is capable of association~~ associates with said first attachment site to form an ordered and repetitive ~~antigen~~ array~~, preferably via at least one non-peptide bond~~.

20. (currently amended) The composition of claim 19, wherein said first attachment site comprises~~, preferably is, an amino group, and wherein preferably said first attachment site comprises, preferably is,~~ a lysine residue, and wherein said second attachment site comprises~~, preferably is, a sulfhydryl group, and wherein preferably said second attachment site comprises, preferably is,~~ a cysteine residue.

21. (previously presented) The composition of claim 19, wherein said second attachment site does not naturally occur within said organic molecule.

22. (currently amended) The composition of claim 19, wherein said composition comprises an amino acid linker~~, and wherein preferably said amino acid linker is bound to said antigen or said antigenic determinant by way of at least one covalent bond, preferably by way of at least one peptide bond~~.

23. (currently amended) The composition of ~~19~~ 22, wherein said amino acid linker comprises said second attachment site.

24. (currently amended) The composition of claim 22, wherein said amino acid linker is selected from the group consisting of:

(a) CGG;

(b) an N-terminal gamma 1-linker;

(c) an N-terminal gamma 3-linker;

(d) an Ig hinge regions;

(e) an N-terminal glycine linkers;

(f) $(G)_kC(G)_n$ with n=0-12 and k=0-5 (SEQ ID NO: 93);

(g) an N-terminal glycine-serine linkers;

(h) $(G)_kC(G)_m(S)_l(GGGGS)_n$ with n=0-3, k=0-5, m=0-10, l=0-2 (SEQ ID NO: 94);

(i) GGC;

(~~k~~j) GGC-NH2;

(~~l~~k) a C-terminal gamma 1-linker;

(~~m~~l) a C-terminal gamma 3-linker;

(~~n~~m) a C-terminal glycine linkers;

(~~o~~n) $(G)_nC(G)_k$ with n=0-12 and k=0-5 (SEQ ID NO: 95);

(~~p~~o) a C-terminal glycine-serine linkers; and

(~~q~~p) $(G)_m(S)_l(GGGGS)_n(G)_oC(G)_k$ with n=0-3, k=0-5, m=0-10, l=0-2, and o=0-8 (SEQ ID NO: 96).

25. (currently amended) The composition of claim 13, wherein said organic molecule is selected from the group consisting of:

(a) an organic molecule suited to induce an immune response against cancer cells;

(b) an organic molecule suited to induce an immune response against infectious diseases;

(c) an organic molecule suited to induce an immune response against allergens;

(d) an organic molecule suited to induce an improved response against self-antigens;

(e) an organic molecule suited to induce an immune response in farm animals or pets; and

(f) an organic molecule suited to induce a response against a drug, a hormone or a toxic compound.~~; and~~

~~(g) fragments, muteins or domains of the molecules set out in (a)-(f).~~

26. (currently amended) The composition of claim 13, wherein ~~the~~ said organic molecule is an antigen or an antigenic determinant, or a fragment or mutein thereof, ~~being~~ selected from the group consisting of:

(a) an antigen or an antigenic determinant suited to induce an immune response against a cancer cells;

(b) an antigen or an antigenic determinant suited to induce an immune response against an infectious diseases;

(c) an antigen or an antigenic determinant suited to induce an immune response against an allergens;

(d) an antigen or an antigenic determinant suited to induce an ~~improved~~ immune response against a self-antigens;

(e) an antigen or an antigenic determinant suited to induce an immune response in farm animals or pets; and

(f) an antigen or an antigenic determinant suited to induce a response against a drug, a hormone or a toxic compound.~~; and~~

~~(g) fragments or domains of the molecules set out in (a)-(f).~~

27. (currently amended) The composition of claim 13, wherein said organic molecule is an antigen selected from the group consisting of :

(a) a polypeptide of HIV[[,]] ;

(b) a polypeptide of Influenza virus[[,]] ;

(c) a polypeptide of Hepatitis C virus[[,]] ;

(d) a polypeptide of *Toxoplasma*[[,]] ;

(e) a polypeptide of *Plasmodium falciparum*[[,]] ;

(f) a polypeptide of *Plasmodium vivax*[[,]] ;

(g) a polypeptide of *Plasmodium ovale*[[,]] ;

(h) a polypeptide of *Plasmodium malariae*[[,]] ;

(i) a polypeptide of breast cancer cells[[,]] ;

(j) a polypeptide of kidney cancer cells[[,]] ;

(k) a polypeptide of prostate cancer cells[[,]] ;

(l) a polypeptide of skin cancer cells[[,]] ;

(m) a polypeptide of brain cancer cells[[,]] ;

(n) a polypeptide of leukemia cells[[,]] ;

(o) a recombinant profiling[[,]] ;

(p) a polypeptide of bee sting allergy[[,]] ;

(q) a polypeptide of nut allergy[[,]] ;

(r) a polypeptide of food allergies[[,]] ;

(s) a polypeptide of asthma[[, or]] ;

(t) a polypeptide of *Chlamydia*;

(u) Her2[[,]] ;

(v) GD2[[,]] ;

(w) EGF-R[[,]] ;

(x) CEA[[,]] ;

(y) CD52[[,]] ;

(z) Human melanoma gp100[[,]] ;

(aa) Human melanoma melanA/MART-1[[,]] ;

(bb) Tyrosinase[[,]] ;

(cc) NA17-A nt[[,]] ;

(dd) MAGE3[[,]] ;

(ee) P53[[, and]] ;

(ff) HPV16E7; and

(gg) any fragment or mutein of said antigen of (a) to (z) ~~and~~ or of (aa) to (ff).

28. (previously presented) The composition of claim 18, wherein said antigen or antigenic determinant is a peptide, a protein, or a fragment or mutein of a protein or peptide, selected from the group consisting of:

(a) a phospholipase A_2 protein;

(b) a human IgE;

(c) a lymphotoxin;

(d) an Influenza M2 protein; and

(e) a Der p I peptide.

29. (currently amended) The composition of claim 13, wherein said organic molecule is an antigen or antigenic determinant~~, further~~ that ~~said antigen or said antigenic determinant~~ is a self antigen or an anti-idiotypic antibody, or a fragments ~~of either~~ thereof.

30. (currently amended) The composition of claim 29, wherein said self antigen is a protein, a peptide or ~~any~~ a fragments or muteins thereof, selected from the group consisting of:

(a) a lymphotoxin;
(b) a lymphotoxin receptor;
(c) RANKL;
(d) VEGF;
(e) VEGFR;
(f) Interleukin-5;
(g) Interleukin-8;
(h) Interleukin-17;
(i) Interleukin-13;
(j) Angiotensin;
(k) CCL21;
(l) CXCL12;
(m) SDF-1;
(n) MCP-1;
(o) Endoglin;
(p) Resistin;
(q) GHRH;
(r) LHRH;
(s) TRH;
(t) MIF;
(u) Eotaxin;
(v) Bradykinin;
(v) BLC;
(w) M-CSF;
(x) Tumor Necrosis Factor α (TNFα);
(y) amyloid beta peptide ($A\beta_{1-42}$); and
(z) a human IgE.

31. (currently amended) The composition of claim 29, wherein said self antigen is a lymphotoxin or a fragment thereof selected from the group ~~consisiting~~ consisting of:

(a) lymphotoxin α (LTα);

(b) lymphotoxin β (LTβ); and

(c) a mixture or combination of LTα and LTβ.

32. (previously presented) The composition of claim 13, wherein said organic molecule is an organic molecule suited to induce an immune response against a drug, hormone or toxin.

33. (currently amended) The composition of claim 32, wherein said organic molecule is ~~an organic molecule~~ suited to induce an immune response against a drug.

34. (previously presented) The composition of claim 33, wherein said drug is selected from the group consisting of:

(a) codeine;

(b) fentanyl;

(c) heroin;

(d) morphine;

(e) amphetamine;

(f) cocaine;

(g) methylenedioxymethamphetamine;

(h) methamphetamine;

(i) methylphenidate;

(j) nicotine;

(k) LSD;

(l) mescaline;

(m) psilocybin; and

(n) tetrahydrocannabinol.

35. (previously presented) The composition of claim 34, wherein said drug is nicotine.

36. (currently amended) The composition of claim 13, wherein ~~the~~ said organic molecule is suited to induce an immune response against a hormone.

37. (currently amended) The composition of claim 36, wherein ~~the~~ said hormone is selected from the group ~~comprising~~ consisting of:

(a) Progesterone;

(b) Estrogen;

(c) Testosterone;

(d) follicle stimulating hormone;

(e) melanin stimulating hormone;

(f) adrenalin; and

(g) noradrenalin.

38. (currently amended) The composition of claim ~~13~~ 32, wherein ~~the~~ said organic molecule is suited to induce an immune response against a toxin.

39. (currently amended) The composition of claim 38, wherein ~~the~~ said toxin is selected from the group consisting of:

(a) Aflatoxin;

(b) ciguetera toxin;

(c) tetrodotoxin;

(d) an antibiotics; and

(e) an anticancer agents.

40. (currently amended) A pharmaceutical composition comprising:

(a) the composition of claim 13 and

(b) ~~an acceptable pharmaceutical~~ a pharmaceutically acceptable carrier.

41. (currently amended) A ~~vaccine~~ composition comprising ~~an immunologically effective amount of~~ the composition of claim 13 and an adjuvant.

42. (currently amended) A method of immunization of an animal comprising administering the ~~vaccine~~ composition of claim ~~41~~ 13 to an animal whereby an immune response against said organic molecule is produced in said animal.

43. (cancelled)

44. (currently amended) A process for producing a non-naturally occurring, ordered and repetitive ~~antigen~~ array comprising:

(a) providing a molecular scaffold comprising a core particle ~~selected from the group~~ of

~~(i) an AP205 virus; and~~

~~(ii)~~ an AP205 virus-like particles comprising at least one protein comprising amino acids 2 to 131 of SEQ ID NO:1; ~~and~~

(b) providing an organic molecule suitable for inducing an immune response;

(c) providing a means of associating (a) and (b), said means optionally contained within (a) and/or (b), or as a separate molecule; ~~and~~ and

(d) combining the elements of (a) through (c), such that said organic molecule associates with said scaffold to form an ordered and repetitive ~~antigen~~ array.

45. (currently amended) A method of treating or preventing a disease, disorder or physiologic conditions in an animal ~~individual~~, said method comprising administering ~~to an individual~~ the composition of claim 13 to an animal, whereby an immune response against said organic molecule is obtained, and wherein said immune response results in treatment or prevention of said disease, disorder or physiologic condition in said animal.

46. (currently amended) A method of treating or preventing a disease, disorder or physiologic conditions in an ~~individual~~ animal, said method comprising administering ~~to an individual~~ the ~~vaccine~~ composition of claim 41 to an animal, whereby an immune response against said organic molecule is produced in said animal, and wherein said immune response results in treatment or prevention of said disease, disorder or physiologic condition in said animal.

47. (currently amended) A nucleic acid molecule comprising ~~a~~ the nucleotide sequence as set forth in SEQ ID NO:125.

48. (currently amended) A host cell ~~containing~~ comprising a nucleic acid molecule according to claim 47 or a vector according to claim 11.

49. (previously presented) The host cell of claim 48, wherein said host cell is *E.coli*.

50. (currently amended) A method of producing a virus-like particle ~~according to claim 1~~ comprising ~~the steps of~~ :

(a) providing a nucleic acid molecule according to claim 47 or a vector according to claim 11;

(b) introducing said nucleic acid or said vector into a host cell; and

(c) expressing said nucleic acid or the sequence of said vector in said host cell to obtain a protein ~~or a mutein~~ capable of forming ~~a~~ said virus-like particle ~~according to claim 1~~.

51. (previously presented) The method of claim 50, wherein said host cell is *E.coli*.

52. (new) The composition of claim 13, wherein said organic molecule is bound to said core particle by at least one peptide covalent bond.

53. (new) The composition of claim 13, wherein said organic molecule is an antigen or an antigenic determinant.

54. (new) The composition of claim 13, wherein said core particle contains at least a first attachment site, and said organic molecule contains at least a second attachment site, such that said second attachment site associates with said first attachment site to form an ordered and repetitive array via at least one non-peptide bond.

55. (new) The composition of claim 19, wherein said first attachment site is an amino group, and wherein said second attachment site is a sulfhydryl group.

56. (new) The composition of claim 22, wherein said amino acid linker is bound to said organic molecule by way of at least one covalent bond.

57. (new) The composition of claim 22, wherein said amino acid linker is bound to said organic molecule by way of at least one peptide bond.

58. (new) A virus-like particle comprising at least one protein selected from the group consisting of:

(a) a protein comprising amino acids 2-131 of SEQ ID NO:1;

(b) a protein comprising amino acids 2-131 of SEQ ID NO:3; and

(c) a mutein of SEQ ID NO:1, wherein said mutein consists of an addition, deletion or substitution of one to three amino acids from amino acids 1-131 of SEQ ID NO:1.

59. (new) The virus-like particle of claim 58, wherein said protein is recombinant.

60. (new) The virus-like particle of claim 58 comprising at least one protein comprising amino acids 2-131 of SEQ ID NO:3.

61. (new) The virus-like particle of claim 58 comprising at least one mutein of SEQ ID NO:1, wherein said mutein consists of an addition, deletion or substitution of one amino acid from amino acids 2-131 of SEQ ID NO:1.

62. (new) A vector for producing an AP205 virus-like particle, wherein said vector comprises a nucleotide sequence encoding a protein comprising amino acids 2-131 of SEQ ID NO:3.

63. (new) A vector for producing an AP205 virus-like particle, wherein said vector comprises a nucleotide sequence encoding a mutein of SEQ ID NO:1, wherein said mutein consists of an addition, deletion or substitution of one to three amino acids from amino acids 2-131 of SEQ ID NO:1.

64. (new) The vector of claim 63, wherein said mutein consists of an addition, deletion or substitution of one amino acid from amino acids 2-131 of SEQ ID NO:1.

65. (new) A composition comprising:

(a) a core particle selected from the group consisting of

(i) an AP205 virus-like particle comprising at least one protein comprising amino acids 2-131 of SEQ ID NO:1;

(ii) an AP205 virus-like particle comprising at least one protein comprising amino acids 2-131 of SEQ ID NO:3; and

(iii) a mutein of SEQ ID NO:1, wherein said mutein consists of an addition, deletion or substitution of one to three amino acids from amino acids 1-131 of SEQ ID NO:1; and

(b) an organic molecule, wherein said organic molecule is bound to said core particle.

66. (new) The composition of claim 65, wherein said organic molecule forms an ordered and repetitive array on the surface of said core particle.

67. (new) The composition of claim 65, wherein said organic molecule is bound to said core particle via a third molecule.

68. (new) The composition of claim 65, wherein said organic molecule is bound to said core particle by at least one covalent bond.

69. (new) The composition of claim 65, wherein said organic molecule is bound to said core particle by at least one peptide covalent bond.

70. (new) The composition of claim 65, wherein said organic molecule is bound to said core particle by at least one non-peptide covalent bond.

71. (new) The composition of claim 65, wherein said virus-like particle comprises at least one first attachment site, said organic molecule comprises at least one second attachment site, such that said second

attachment site associates with said first attachment site to form an ordered and repetitive array via at least one covalent bond.

72. (new) The composition of claim 71, wherein said first attachment site is an amino group, and wherein said second attachment site is a sulfhydryl group.

73. (new) The composition of claim 71, wherein said first attachment site comprises a lysine residue, and wherein said second attachment site comprises a cysteine residue.

74. (new) The composition of claim 71, wherein said second attachment site does not naturally occur within said organic molecule.

75. (new) The composition of claim 65, wherein said composition comprises an amino acid linker.

76. (new) The composition of claim 75, wherein said amino acid linker is bound to said organic molecule by way of at least one covalent bond.

77. (new) The composition of 75, wherein said amino acid linker comprises said second attachment site.

78. (new) The composition of claim 75, wherein said amino acid linker is selected from the group consisting of:

(a) CGG;
(b) an N-terminal gamma 1-linker;
(c) an N-terminal gamma 3-linker;
(d) an Ig hinge region;
(e) an N-terminal glycine linker;
(f) $(G)_kC(G)_n$ with n=0-12 and k=0-5 (SEQ ID NO: 93);
(g) an N-terminal glycine-serine linker;
(h) $(G)_kC(G)_m(S)_l(GGGGS)_n$ with n=0-3, k=0-5, m=0-10, l=0-2 (SEQ ID NO: 94);

(i) GGC;

(j) GGC-NH2;

(k) a C-terminal gamma 1-linker;

(l) a C-terminal gamma 3-linker;

(m) a C-terminal glycine linker;

(n) $(G)_nC(G)_k$ with n=0-12 and k=0-5 (SEQ ID NO: 95);

(o) a C-terminal glycine-serine linker; and

(p) $(G)_m(S)_l(GGGGS)_n(G)_oC(G)_k$ with n=0-3, k=0-5, m=0-10, l=0-2, and o=0-8 (SEQ ID NO: 96).

79. (new) The composition of claim 65, wherein said organic molecule is selected from the group consisting of:

(a) an organic molecule suited to induce an immune response against a cancer cell;

(b) an organic molecule suited to induce an immune response against an infectious disease;

(c) an organic molecule suited to induce an immune response against an allergen;

(d) an organic molecule suited to induce an immune response against a self-antigen;

(e) an organic molecule suited to induce an immune response in farm animals or pets; and

(f) an organic molecule suited to induce a response against a drug, a hormone or a toxic compound.

80. (new) The composition of claim 65, wherein said organic molecule is a hapten, an antigen or an antigenic determinant.

81. (new) The composition of claim 65, wherein said organic molecule is an antigen or an antigenic determinant, or a fragment or mutein thereof, selected from the group consisting of:

(a) an antigen or an antigenic determinant suited to induce an immune response against a cancer cell;

(b) an antigen or an antigenic determinant suited to induce an immune response against an infectious disease;

(c) an antigen or an antigenic determinant suited to induce an immune response against an allergen;

(d) an antigen or an antigenic determinant suited to induce an immune response against a self-antigen;

(e) an antigen or an antigenic determinant suited to induce an immune response in farm animals or pets; and

(f) an antigen or an antigenic determinant suited to induce a response against a drug, a hormone or a toxic compound.

82. (new) The composition of claim 65, wherein said organic molecule is an antigen selected from the group consisting of:

(a) a polypeptide of HIV;

(b) a polypeptide of Influenza virus;

(c) a polypeptide of Hepatitis C virus;

(d) a polypeptide of *Toxoplasma*;

(e) a polypeptide of *Plasmodium falciparum;*

(f) a polypeptide of *Plasmodium vivax*;

(g) a polypeptide of *Plasmodium ovale*;

(h) a polypeptide of *Plasmodium malariae*;

(i) a polypeptide of breast cancer cells;

(j) a polypeptide of kidney cancer cells;

(k) a polypeptide of prostate cancer cells;

(l) a polypeptide of skin cancer cells;

(m) a polypeptide of brain cancer cells;

(n) a polypeptide of leukemia cells;

(o) a recombinant profiling;

(p) a polypeptide of bee sting allergy;

(q) a polypeptide of nut allergy;

(r) a polypeptide of food allergies;

(s) a polypeptide of asthma;

(t) a polypeptide of *Chlamydia*;

(u) Her2;

(v) GD2;

(w) EGF-R;

(x) CEA;

(y) CD52;

(z) Human melanoma gp100;

(aa) Human melanoma melanA/MART-1;

(bb) Tyrosinase;

(cc) NA17-A nt;

(dd) MAGE3;

(ee) P53;

(ff) HPV16E7; and

(gg) any fragment or mutein of said antigen of (a) to (z) or of (aa) to (ff).

83. (new) The composition of claim 74, wherein said antigen or antigenic determinant is a peptide, a protein, or a fragment or mutein of a protein or peptide, selected from the group consisting of:

(a) a phospholipase A_2 protein;

(b) a human IgE;

(c) a lymphotoxin;

(d) an Influenza M2 protein; and

(e) a Der p I peptide.

84. (new) The composition of claim 65, wherein said organic molecule is a self antigen, an anti-idiotypic antibody, or a fragment thereof.

85. (new) The composition of claim 84, wherein said self antigen is a protein, a peptide or a fragment or mutein thereof, selected from the group consisting of:

(a) a lymphotoxin;
(b) a lymphotoxin receptor;
(c) RANKL;
(d) VEGF;
(e) VEGFR;
(f) Interleukin-5;
(g) Interleukin-8
(h) Interleukin-17;
(i) Interleukin-13;
(j) Angiotensin;
(k) CCL21;
(l) CXCL12;
(m) SDF-1;
(n) MCP-1;
(o) Endoglin;
(p) Resistin;
(q) GHRH;
(r) LHRH;
(s) TRH;
(t) MIF;
(u) Eotaxin;
(v) Bradykinin;
(v) BLC;
(w) M-CSF;
(x) Tumor Necrosis Factor α (TNFα);
(y) amyloid beta peptide ($A\beta_{1-42}$); and
(z) a human IgE.

86. (new) The composition of claim 84, wherein said self antigen is a lymphotoxin or a fragment thereof selected from the group consisting of:

(a) a lymphotoxin α (LTα);

(b) a lymphotoxin β (LTβ); and

(c) a mixture or combination of LTα and LTβ.

87. (new) The composition of claim 65, wherein said organic molecule is an organic molecule suited to induce an immune response against a drug, hormone or toxin.

88. (new) The composition of claim 87, wherein said organic molecule is suited to induce an immune response against a drug.

89. (new) The composition of claim 33, wherein said drug is selected from the group consisting of:

(a) codeine;

(b) fentanyl;

(c) heroin;

(d) morphine;

(e) amphetamine;

(f) cocaine;

(g) methylenedioxymethamphetamine;

(h) methamphetamine;

(i) methylphenidate;

(j) nicotine;

(k) LSD;

(l) mescaline;

(m) psilocybin; and

(n) tetrahydrocannabinol.

90. (new) The composition of claim 89, wherein said drug is nicotine.

91. (new) The composition of claim 87, wherein said organic molecule is suited to induce an immune response against a hormone.

92. (new) The composition of claim 91, wherein said hormone is selected from the group consisting of:

(a) Progesterone;
(b) Estrogen;
(c) Testosterone;
(d) follicle stimulating hormone;
(e) melanin stimulating hormone;
(f) adrenalin; and
(g) noradrenalin.

93. (new) The composition of claim 87, wherein said organic molecule is suited to induce an immune response against a toxin.

94. (new) The composition of claim 93 wherein said toxin is selected from the group consisting of:

(a) Aflatoxin;
(b) ciguetera toxin;
(c) tetrodotoxin;
(d) antibiotics; and
(e) anticancer agents.

95. (new) The composition of claim 71, wherein said covalent bond is a peptide covalent bond.

96. (new) The composition of claim 71, wherein said covalent bond is a non-peptide covalent bond.

97. (new) A pharmaceutical composition comprising the composition of claim 65 and a pharmaceutically acceptable carrier.

98. (new) A composition comprising the composition of claim 65 and an adjuvant.

99. (new) A method of immunization of an animal comprising administering the composition of claim 65 to said animal, whereby an immune response against said organic molecule is produced in said animal.

100. (new) A process for producing a non-naturally occurring, ordered and repetitive array comprising:

(a) providing a molecular scaffold comprising a virus-like particle selected from the group consisting of:

(i) a protein comprising amino acids 2-131 of SEQ ID NO:1;

(ii) a protein comprising amino acids 2-131 of SEQ ID NO:3; and

(iii) a mutein of SEQ ID NO:1, wherein said mutein consists of an addition, deletion or substitution of one to three amino acids from amino acids 1-131 of SEQ ID NO:1;

(b) providing an organic molecule suitable for inducing an immune response;

(c) providing a means of associating (a) and (b), said means optionally contained within (a) and/or (b), or as a separate molecule; and

(d) combining the elements of (a) through (c), such that said organic molecule associates with said scaffold to form said ordered and repetitive array.

101. (new) A method of treating or preventing a disease, disorder or physiologic condition in an animal, comprising administering the composition of claim 65 to an animal, whereby an immune response against said organic molecule is produced in said animal, and wherein said immune response results in treatment or prevention of said disease, disorder or physiologic condition.

102. (new) A method of treating or preventing a disease, disorder or physiologic condition in an animal, said method comprising administering the composition of claim 98 to an animal, whereby an immune response against said organic molecule is produced in said animal, and wherein said immune response results in treatment or prevention of said disease, disorder or physiologic condition.

103. (new) A host cell comprising the vector of claim 62 or 63.

104. (new) The host cell of claim 101, wherein said host cell is *E.coli*.

105. (new) A method of producing a virus-like particle comprising

(a) providing a vector according to claim 62 or claim 63;

(b) introducing said vector into a host cell; and

(c) expressing the sequence of said vector in said host cell to obtain a protein or a mutein capable of forming a virus-like particle.

106. (new) The method of claim 105, wherein said host cell is *E.coli*.